

BANKS FOR HUMAN "SPARE PARTS"

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Banks for Human "Spare Parts"



By Lois Mattox Miller

INSPIRED by the lifesaving feats of the blood banks, medical science has begun developing banks in which to store other "spare parts" of the human body for surgical use in emergencies.

The Eye Bank

Thousands of persons — estimates run as high as 100,000 — whose sight has been dimmed or lost through damage to the cornea, the clear, transparent membrane that covers the iris of the eye, have been waiting patiently for the promised operation that will enable them to see again.* This operation is extremely delicate; there are perhaps 20 surgeons in the United States qualified to perform it. A clear piece of cornea taken from another eye is skillfully stitched in place of the damaged membrane.

The difficulty has been to obtain eyes. Rarely, an eye would be sacrificed by a living donor; occasionally some person would execute a will leaving his eyes to science. But there never have been enough eyes to supply the demand; surgeons could perform the operation only occasionally.

Now the hospitals of New York City have established the world's first eye bank. Nineteen hospitals have agreed to supply eyes. They deal with would-be donors, furnish the necessary legal papers to be signed (in New York State the consent of the next of kin must be obtained), and remove the eye from the donor's body immediately after death.

* See "An Eye for an Eye," The Reader's Digest, December, '43.

The American Red Cross Motor Corps rushes the eye to the New York Hospital where it is stored in the plasma bank at proper temperature until needed.

The eyes of stillborn babies can be used, but the chief source of supply is expected to be adult donors. Says one doctor: "Dedicating the eyes of a person who has passed away to restore the sight of a living person who otherwise would have to sit in darkness is a beautiful memorial indeed."

Bank for Dehydrated Nerves

Wounds which sever important nerves are one of the surgeon's most difficult problems. Unless the nerves can be mended, the patient will be crippled. Sometimes the ends of the severed nerve can be brought together and joined with a cement or "nerve glue" made from blood; but where sections of the nerve have been torn away repair has heretofore been impossible. Surgeons tried transplanting bits of nerves from one portion of the human body to another, but the results were never wholly satisfactory.

Surgeons urgently needed some means of storing and preserving spare sections of nerves for emergency surgery. Dr. Paul Weiss of the University of Chicago developed a technique for instantaneously freezing sections of freshly removed nerves, then dehydrating them in a high vacuum and storing in sealed sterile containers.

Dr. R. M. Klemme and his associates of the St. Louis University School of Medicine have done outstanding pioneer work in nerve grafting to replace missing sec-

tions. They have used nerves removed from bodies and stored. So far 28 peripheral nerve grafts have been made and, except for two cases which it is too soon to judge, the results have been surprisingly successful. In one case these doctors restored the entire group of nerves taking care of one complete arm. This involved connecting six nerve ends from the shoulder side with 17 from the arm. The feat is believed to be unparalleled. Dr. Klemme himself considers it the most exciting operation he has ever done.

The Russians have used preserved nerve fragments, removed from the bodies of their own battle casualties, for repair surgery. According to Russian reports, war-torn arms and legs are thus restored to complete usefulness.

The Artery Bridge

As recently as in the African campaign, a wound which severed the main artery of an arm or leg meant, two times out of three, that gangrene would set in, and the limb would have to be amputated. Now the use of quick-frozen sections of veins greatly reduces the odds.

Dr. Arthur H. Blakemore, Dr. Jere W. Lord and Dr. Paul Stefko of Columbia Presbyterian Medical Center, New York, devised the ingenious "artery bridge." They line a small vitallium tube with a section of preserved human vein, bringing the ends of the vein back over the ends of the tube to form a cuff. The ends of the severed main artery are slipped over the ends of the tube and tied in place with silk. The blood stream flows uninterruptedly through the vein-lined tube; the healing process begins immediately between the vein cuffs and artery ends. The vitallium tube remains in place, harm-

lessly, for the rest of the patient's life.

Banks for frozen veins will be standard in postwar hospitals, the doctors believe.

Cartilage from Cadavers

Cartilage, the tough, flexible "gristle" of the human body, is one of the most essential materials of the plastic surgeon, particularly in such facial reconstruction as the shaping of new noses and ears. Usually it has been obtained from the patient's own ribs in a disagreeable chest operation.

Because they expect that a great deal of plastic surgery will have to be done for the wounded and disfigured after this war, doctors recently have been trying to perfect means to preserve cartilage taken from the dead. The disadvantage of preserved cartilage has been a tendency to break down and become absorbed.

The best solution seems to have been found by Drs. G. B. O'Connor and G. W. Pierce of San Francisco. Dr. O'Connor stores his cartilage "spare parts" in a sterile container filled with a special saline solution and kept under refrigeration. The solution is changed weekly. Dr. O'Connor reports that he has used cartilage grafts successfully after two years' storage. He finds that his preserved cartilage even has certain advantages over fresh material taken from the patient's own body.

During the past five years, Drs. O'Connor and Pierce have made cartilage transplants in 375 cases. Of these, all but seven retained their original shape, and in only one case was the cartilage absorbed.

Today, it appears that a cartilage bank will be an important adjunct to the reconstruction of the facial disfigurements of World War II.

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